

Commonwealth Graduate Engineering Program



**Annual Report
Academic Year 2004-2005**

**Operating Plan
Academic Year 2005-2006**

Presented to
State Council of Higher Education for Virginia
May 10, 2005

Presented by
James F. Groves, CGEP State Chair and UVa Director
Stephen Nash, CGEP GMU Director
Berndt Bohm, CGEP ODU Director
Tom Overby, CGEP VCU Director
Glenda R. Scales, CGEP VT Director

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Message from the State Director



This has been my first year serving in the role as State Director of the Commonwealth Graduate Engineering Program. On July 1, 2004 I took over from Glenda Scales of Virginia Tech, following her three years of dedicated service. I will now hold this position until June 30, 2007. In June 2004, CGEP held its Annual Conference at Old Dominion

University, inviting the CGEP Directors from each participating university and staff members from the program's broadcast and receive sites to join in a discussion of the program. At that meeting I outlined two primary undertakings that I would spearhead during the 2004-2005 year as State Chair. First, I pledged to push forward on development of a new nanotechnology course-sharing initiative. Development of this program would address one of the key elements of the 2002 CGEP Strategic Plan – offering of courses and programs in emerging technology arenas. Second, I pledged to build upon the statewide web site developed under the leadership of Glenda Scales. Enhancement of the web site would make the internet location more valuable to students as they sought to understand the program and how they might mix and match course offerings from the various schools into a fruitful educational experience.

Throughout the fall, I worked closely with the CGEP Directors and the members of the CGEP Advisory Board to build momentum on our nanotechnology course-sharing initiative. Throughout the summer and early fall, this community refined the vision for the initiative, developing a program endowment proposal that included a two year rotation of course-sharing, industry-centric short courses, an annual nanotechnology workshop, and marketing of graduate student nanotechnology research opportunities in the Commonwealth. Then, in the fall, the plan was presented to SCHEV for review. During an October meeting, the plan was endorsed by SCHEV, and we moved forward to secure funding support from the state. Following a set of fall discussions with the governor's office regarding the best mechanism for Commonwealth support of the initiative, new resources (\$155,000 in fiscal year 2006) were placed in the governor's budget for the initiative. However, during the spring legislative session, the House and Senate both removed the initiative from the new state allocations. This ultimate setback highlighted the importance of broad corporate support for CGEP initiatives. While the ultimate state decision regarding funding was certainly a setback to our plans, we remain optimistic that we will be able to secure funding in the near future. Following a Spring 2005 CGEP Advisory Board meeting, we have identified several courses of action that we believe will enhance

our opportunities for initiative financing, including a renewed request to the Commonwealth and development of a small, seed-grant proposal to the National Science Foundation, through its Partnerships for Innovation grant program. Thus, in the coming year, we will continue to be active on this initiative.

The web site revision work is nearly complete. Throughout the academic year, we have had a web designer building the new database driven features of the web site and the various university program administrators have been assisting in the debugging of the new design. The new web site will allow students to visit one central location where they can obtain a listing of all CGEP courses that will be offered in each upcoming semester. They will be able to see which remote sites will host the various courses. Additionally, students will be able to sign up for a class cancellation notice system. From time to time, classes have to be cancelled, e.g. due to snow, and the notice system will alert students to unexpected schedule changes. Finally, the new web site will allow students to initiate construction of their plans of study. Each student in a program has to complete on order ten classes to receive her or his degree. The new web based system will allow students to search the database, identify interesting courses offered at their receive location, and place those courses onto an informal plan of study listing. This will make it easier for them to determine whether CGEP is the right education option for them. I am confident that this new system will make the educational opportunities of CGEP more accessible to our working engineer student community.

I have enjoyed the opportunity this year to serve as CGEP State Chair, and I look forward to the upcoming year during which we will continue to push forward on our nanotechnology initiative. In addition, it appears that the other major initiative for CGEP will be development of a transition plan for live course broadcasts. While today CGEP courses are transmitted around the state using a dedicated asynchronous transfer mode (ATM) network, it appears certain that we will need to move our broadcasts to internet protocol (IP) transmission in the near future. The continued march forward of technology is dictating this change to us, and we need to prepare for the inevitable switch. Work has been underway already this year as CGEP technical staff members have been examining the details of the move. As soon as we can ensure quality-of-service in the new environment, we will take the steps necessary to move CGEP forward into its next frontier of service.

*--James F. Groves
CGEP State Chair*

Message from the Advisory Board Chairman

The Advisory Board continued its role as outside advisor to CGEP during the 2004-2005 Academic Year. It continued to serve as the convener of the CGEP Directors, public and private employers, former students, and other stakeholders in biannual meetings to evaluate current and proposed programs, review impact of new delivery technologies, and evaluate the exciting prospects of new scientific and technological breakthroughs on academic programs. We are fortunate to have fine academic resources in Virginia that are responsive to the collective interests of a broad constituency of employers, industry, institutions, and government.

The Advisory Board strongly supported the proposed nanotechnology program, which would have funded an endowment for the development of new graduate curriculum and industry-centric short-courses. The Board worked with industrial and institutional stakeholders to describe the program's potential and to enlist their aid in demonstrating the

value of the program to our legislators. We were disappointed that, despite inclusion of the program in the Governor's Budget proposal, the Virginia General Assembly elected not to provide funding. But we remain optimistic that the rapid progress in this field will be recognized, and we have agreed to help pursue state funding next year as well. Meanwhile, CGEP institutions will work together to pursue funding from the National Science Foundation through its Partnerships for Innovation (PFI) program.

While the nanotechnology funding may have been a disappointment, other developments encouraged by the Board have been quite successful. Many courses are being cross-listed between our participating institutions, enrollments are stable, and more courses are being offered. Of particular interest is the strength of CGEP's partnerships, such as its graduate course offerings to Dahlgren. The Advisory Board continues to be pleased with CGEP's development and pledges to assist its mission and promote its growth in new areas that will bring economic growth to our Commonwealth.

*--Thomas N. Williams
Honeywell Specialty Materials*

Expenditures

A comparison of appropriations to expenditures is found in Table 1. The detailed expenditure reports are found in Tables 2 and 3.

Commonwealth Graduate Engineering Program Comparison of Appropriations to Expenditures

Table 1

CGEP Institutions	2004-05				2005-06							
	Appropriations (1)			Total Expenditures	Appropriations (1)						Total Planned Expenditures	% Incr Over fy05 Exp.
	General Fund	Nongeneral Fund	Total		General Fund	% Incr	Nongeneral Fund	% Incr	Total	% Incr		
George Mason University	\$289,614	\$124,120	\$413,734	\$551,284	\$289,614	0%	\$124,120	0%	\$413,734	0%	\$565,066	2%
Old Dominion University	\$431,013	\$198,244	\$629,257	\$696,279	\$431,013	0%	\$198,244	0%	\$629,257	0%	\$717,162	3%
University of Virginia	\$625,197	\$318,850	\$944,047	\$1,539,715	\$625,197	0%	\$318,850	0%	\$944,047	0%	\$1,539,715	0%
VA Commonwealth University	\$388,468	\$168,533	\$557,001	\$644,543	\$388,468	0%	\$168,533	0%	\$557,001	0%	\$644,543	0%
Virginia Tech	\$869,882	\$436,357	\$1,306,239	\$1,871,146	\$869,882	0%	\$436,357	0%	\$1,306,239	0%	\$1,957,581	4%
Halifax/South Boston Continuing Education Center/Longwood College	\$29,050	\$12,450	\$41,500	\$41,500	\$29,050	0%	\$12,450	0%	\$41,500	0%	\$41,500	0%
University of Mary Washington	\$80,483	\$36,130	\$116,613	\$116,613	\$80,483	0%	\$36,130	0%	\$116,613	0%	\$120,453	3%
Total	\$2,713,707	\$1,294,684	\$4,008,391	\$5,461,080	\$2,713,707	0%	\$1,294,684	0%	\$4,008,391	0%	\$5,586,020	2%

(1) Based on information item amounts included in Chapter 4 of the Appropriation Act.

**Commonwealth Graduate Engineering Program
Expenditures 2004-2005**

Table 2

	GMU		ODU		UVA		VCU		VT		S.Boston		UMW	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Personnel Services														
1121 Admin Faculty Salaries	0.4	37,855	2.0	141,966	6.93	818,579	1.3	109,177	0.5	62,844				10,769
1123 Classified Salaries	1.1	38,272	4.0	211,311	7.02	212,389	1.0	42,462	5.0	171,562	1.0	31,925		29,798
1126 Teaching and Research faculty	5.6	293,557					4.0	52,000	9.0	714,732				
1142 GTA Wages	1.3	56,952	2.0	54,502	1.00	67,232	4.0	52,000	2.0	43,350				
Other Personnel Services		12,500	3.0	56,159		18,744				42,141				1,786
Fringe Benefits		89,456		122,460		270,097		54,878		276,276				3,390
Total Personnel Services	8.4	528,592	11.0	586,398	14.95	1,387,041	10.3	310,517	16.5	1,310,905	1.0	31,925	0.35	45,743
Non Personnel Services														
1200 Contractual Services		795		76,981		136,048		190,901		447,129		9,575		66,575
1300 Supplies and Materials		1,138				6,006		6,000		6,500				455
1400 Transfer payments		20,759						132,125		48,312				
2200 Equipment		0		32,900		10,620		5,000		58,300				3,840
Total Non Personnel Services		22,692		109,881		152,674		334,026		560,241		9,575		70,870
TOTAL		551,284		696,279		1,539,715		644,543		1,871,146		41,500		116,613

**Commonwealth Graduate Engineering Program
Expenditure Plans for 2005-2006**

Table 3

	GMU		ODU		UVA		VCU		VT		S.Boston		UMW	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Personnel Services														
1121 Admin Faculty Salaries	0.40	38,801	2.0	146,255	7.38	720,508	1.3	109,177	0.5	65,781				10,769
1123 Classified Salaries	1.10	39,229	4.0	217,650	6.35	224,684	1.0	42,462	5.0	179,581	1.0	31,925		29,798
1126 Teaching and Research faculty	5.56	300,896					4.0	52,000	9.0	754,517				
1142 GTA Wages	1.31	58,376	2.0	56,137	1.00	55,700	4.0	52,000	2.0	45,377				
Other Personnel Services		12,813	3.0	57,844		19,727				42,141				1,786
Fringe Benefits		91,692		126,134		275,563		54,878		305,791				3,390
Total Personnel Services	8.37	541,807	11.0	604,020	14.73	1,296,182	10.3	310,517	16.5	1,393,188	1.0	31,925	0.35	45,743
Non Personnel Services														
1200 Contractual Services		815		79,255		225,455		190,901		447,129		9,575		66,575
1300 Supplies and Materials		1,166				18,078		6,000		6,500				455
1400 Transfer payments		21,278						132,125		52,464				
2200 Equipment		0		33,887				5,000		58,300				7,680
Total Non Personnel Services		23,259		113,142		243,533		334,026		564,393		9,575		74,710
TOTAL		565,066		717,162		1,539,715		644,543		1,957,581		41,500		120,453

Enrollments

Enrollment trends for the past four years are depicted in Table 4 below. CGEP Universities are using a variety of delivery methods to meet the needs of our distance learners. This year, CGEP has seen general stability in its course enrollments, with a slight increase in overall student enrollment numbers.

The primary marketing efforts for CGEP continue to be carried out through our receive site coordinators and their open houses and industry college day presentations, as well as human resource directors of corporate and government entities and through our state-wide website: <http://cgep.schev.edu>. The maintenance tasks for this site have been taken over by Dr. James Groves at the University of Virginia, with assistance by Rita Kostoff as of July 1, 2004.

Enrollment Trends – Four Years

Table 4

	2001-02	2002-03	2003-04	2004-05
George Mason University	428	518	429	411
Old Dominion University	3,281	3,088	3,220	3,996
University of Virginia	372	438	617	631
Virginia Tech	1,484	1,497	2,345	2,105
Virginia Commonwealth University	<u>49</u>	<u>131</u>	<u>138</u>	<u>126</u>
TOTALS	5,614	5,672	6,749	7,269

2004-2005 Enrollments by Delivery Method

Table 5

	IVC	CD-Rom	Internet-Based	Total Enrollments
George Mason University	178	0	233	411
Old Dominion University	2,327	1,669	0	3,996
University of Virginia	631	0	0	631
Virginia Tech	1,391	0	714	2,105
Virginia Commonwealth University	126	0	0	126

University Reports

Each director provided a summary annual report and operating plan for their respective institution based upon the mission of each university. These reports will provide a detailed description of CGEP activities at the respective institution.



George Mason University

**Stephen Nash –
Director**

Review of Academic Year 2004-2005

George Mason University (GMU) serves as a host institution for the Virginia Commonwealth Graduate Engineering Program (CGEP). GMU's School of Information Technology and Engineering (IT&E) coordinates the regional Northern Virginia program. In addition, GMU offers Masters degree programs in the following disciplines: Computer Engineering, Computer Science, E-Commerce, Electrical Engineering, Information Systems, Information Security & Assurance, Operations Research, Software Engineering, Statistical Science, Systems Engineering, Telecommunications, and Civil & Infrastructure Engineering. GMU also offers Ph.D. degrees in Computer Science, Information Technology, and Electrical & Computer Engineering, as well as a post-Masters Engineer degree in Information Technology.

Engineering courses televised by the University of Virginia (UVA), Virginia Tech (VT), and Old Dominion University (ODU), along with support courses televised by Virginia Commonwealth University (VCU), provide courses and degree programs not otherwise available in the region, and complement the existing programs at GMU. These offerings provide students a choice among several dozen graduate engineering degree programs. Students have the option of selecting a degree program from GMU, ODU, UVA, or VT, and may enroll in any of the graduate courses offered by these four universities. Our main effort is in broadcasting classes, and the bulk of the budget is used for teaching staff and technical support. The teaching staffs (professors and teaching assistants) are from the School of Information Technology & Engineering.

The CGEP program at GMU has been affected by decreased enrollments in our Computer Science program. Computer Science enrollments have been declining nationwide and the declines reported here are consistent with declines in our on-campus offerings.

CGEP Offerings

In 2004-05, GMU continued to offer engineering courses in a distance-learning format. There are two separate

activities: web-based distribution of courses from our M.S. program in Computer Science (the courses fulfill the requirements for a graduate certificate in Computer Networking, as well as the requirements for a M.S. degree in Computer Science), and VTEL-based distribution of courses from our M.S. program in Systems Engineering. We are gradually adding courses that could be applied toward a Ph.D. in Information Technology (specializing in Systems Engineering).

In 2004-05, eight Computer Science courses and five Systems Engineering courses were broadcast. (Additional courses were distributed using this equipment, but only graduate engineering courses are included in this report.)

Enrollments

There are three categories of students taking the Computer Science courses. One group is enrolled in a "net" section of the courses; these students use distance-learning as their primary access. A second group only attends the class (just like any regular class), but may use the distance-learning resources for studying and review (this is a popular choice). The third group uses both forms of access during the semester, attending some classes in person, and using the distance-learning format for other classes. The enrollment figures below include the students in all three groups.

Continuous Process Improvement Projects

GMU conducts ongoing reviews of its web-casting technology. The students who use this equipment are surveyed to determine the usefulness and appropriateness of this medium for instruction. In addition, there are ongoing discussions with the support staff and faculty, to discuss their satisfaction with the technology.

GMU continues to increase central support to assist with graduate admissions and marketing. This has led to an increase in advertising of our graduate programs (throughout the university, not just CGEP programs), new open-house events, and the development of new advertising materials. The CGEP programs are benefiting from these activities.

Facilities and Support Structure

The courses from our M.S. program in Systems Engineering are transmitted using existing facilities from the CGEP program. The technology is based on the VTEL system, the standard system currently used by the CGEP program. Students are able to complete the M.S. program via distance learning. During 2004-05, the pri-

mary audience was at Dahlgren, although the program could be received at any of the standard CGEP sites.

The courses from our M.S. program in Computer Science were transmitted using a specially established distance-learning classroom. Funds from the CGEP program were used to purchase, install, and test equipment and software for this project. A student can receive a transmission on a standard Windows-based computer equipped with Internet Explorer and some freely available browser plug-ins (e.g., Real Player). The student obtains audio transmission and live-board displays in real time; video is subject to a delay of about 20 seconds. There is also a real-time chat room for asking questions. Students with slow (e.g., dial up) internet connections can eliminate the video transmission.

The technical support is provided GMU's central Electronic Classrooms office. This has expanded our capabilities (we have access to a larger pool of technical staff) and improved our service (since the Electronic Classrooms office provides service from 7:30am to 10:30pm). It is because of the assistance of this office that we were able to develop the ability to transmit courses via the web.

The University upgraded all of its VTEL equipment in Summer 2003. This improved and expanded our capabilities for transmitting and receiving VTEL-based courses at all three GMU campuses. The new equipment has been much more reliable, and student satisfaction with the equipment is good.

CGEP Perspectives for AY 2005-2006

We continue to expand our distance offerings in systems engineering, with the goal of making it possible to complete much of the course work for a Ph.D. degree through distance education. Some of our smaller programs (most notably Computer Engineering and Civil Engineering) are exploring the use of CGEP capabilities to expand the course offerings available to their students.

Old Dominion University

Berndt Bohm – Director



Review of Academic Year 2004 - 2005

Old Dominion University (ODU) is the host institution in the Hampton Roads eastern Virginia region for the Commonwealth Graduate Engineering Program (CGEP). CGEP regional offices and program staff are

located in Old Dominion University's College of Engineering and Technology. The College offers doctoral and masters degrees in Aerospace Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Mechanical Engineering, and Engineering Management. Engineering courses televised by the University of Virginia, Virginia Tech and Virginia Commonwealth University either complement existing programs offered by ODU or provide additional masters programs in Chemical Engineering, Industrial Engineering/Operations Research, Materials Science, and Systems Engineering. Students have the option of selecting a degree program from ODU, UVA or Virginia Tech and may enroll in any of the graduate courses offered by the three universities. VCU broadcasts a program support course that is used by the degree granting universities in their degree programs. Acceptance into degree programs and course prerequisites are outlined in the policies and regulations listed in each university's graduate catalog.

Live telecourses in Hampton Roads are distributed through two separate broadcast systems. Old Dominion University uplinks Engineering Management Department, and Masters programs in Modeling and Simulation courses as well as TELETECHNET courses through a Ku band satellite system and broadcasts through a statewide, broadband network using Net.Work.Virginia. Net.Work.Virginia allows two-way audio and two-way video transmission; satellite broadcast allows two-way audio and one-way video transmission). The University of Virginia and Virginia Tech courses are received via Net.Work.Virginia. Old Dominion University regional telecourses are transmitted by WHRO, the region's PBS station, through a wireless cable network.

The Old Dominion University CGEP program began receiving UVA and Virginia Tech telecourses in 1983 and started broadcasting Engineering Management departmental courses over the statewide network in 1984. Old Dominion University currently receives courses on campus and at the ODU Peninsula Higher Education Center from UVA and VPI & SU engineering courses. ODU broadcasts Engineering Management courses and Modeling and Simulation Courses in support of Master's Degree programs offered by the Commonwealth Graduate Engineering Program. ODU also televises twelve Engineering Technology courses as part of the TELETECHNET program, and televises forty-seven engineering courses for local distribution through WHRO's wireless cable system.

Two years ago a program offering in our Master of Engineering Program with an emphasis in Manufacturing and Design and our Master of Engineering with an emphasis in Experimental Methods started. Both programs experienced minor growth and increased the offerings of Old Dominion University's Commonwealth Graduate Engineering Program

Four years ago Old Dominion University contracted with the U. S. Navy to provide our Master's in Engineering Management degree by way of CD ROMs, email and voice conversation to the Officer Graduates of the Navy's Nuclear Power School who are serving aboard Navy Nuclear submarines. Last year, ODU offered this CD ROM program aboard several submarines as well as surface ships, and it proved to be a success. Between both semesters of the current academic year, there were 1699 Navy officer enrollments in the program. This program reformats a current broadcast CGEP program and converts it with some refinement to the CD format. Commonwealth funds were not used in the program, but it has given us the opportunity to broaden our enrollment and to provide some income for new partnerships and opportunities.

CGEP Offerings

Overall, Old Dominion University enrollments increased this academic year in both Net.Work.Virginia courses, statewide satellite courses, and local broadcast courses. There was a decrease of enrollments in the non-Commonwealth funded CD Rom format courses. Several students from outside Hampton Roads completed their Engineering Management program of study through televised courses and graduated in AY 2004-05. A significant number of students living in Hampton Roads completed their course work by attending televised courses at local receive sites.

The Aerospace Engineering Department broadcasts graduate courses from the ODU campus to a receive site in Hampton operated by the Virginia Consortium of Engineering and Science Universities (VCES). In addition, the Aerospace Engineering Department has been cross-listing courses with the Virginia Commonwealth University School of Engineering per the CGEP pilot study to see if such offerings would be useful to both universities. So far, the program has had excellent results.

Degree Programs

Current: Engineering Management, Modeling and Simulation, Manufacturing and Design, Experimental Methods.

CD ROM: Engineering Management

Certificate Programs: Engineering Management, Project Management and Coastal Engineering.

Enrollments

Over the past several years ODU's CGEP enrollment has increased significantly because of expanded delivery methods. The use of the broadband Net.Work.Virginia network allowed ODU to put more graduate engineering courses into the pipeline. Our Net.Work.Virginia enrollments increased by a small percentage this year. Enrollments increased significantly in the Master's program for the U.S. Navy using the CD ROM as the primary delivery method. This was sup-

plemented with both electronic mail traffic and voice communications. The program has proven to be a great success adding an additional 1669 course enrollments to our overall CGEP course enrollments. By comparison the current enrollment is an increase of 699 enrollments over the previous year.

Continuous Process Improvement Projects

The Old Dominion University Commonwealth Graduate Engineering Program has this past year attempted to increase its market share of graduate engineers by attending several open houses for educational programs at various locations through out Hampton Roads. Continuous feedback has been obtained in conversations with various engineering industries in the region. In addition the feedback of students in the program has been obtained and certain minor corrective actions have been taken.

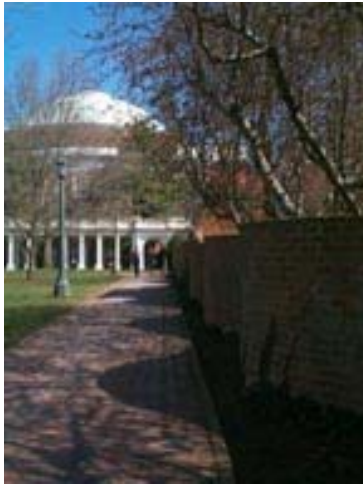
Facilities and Support Structure

ODU operates numerous broadcasts and also receive classrooms on the main Norfolk campus. In addition, the University operates off-campus centers in Hampton, Virginia at the Peninsula Higher Education Center, in Virginia Beach at the Old Dominion University/Norfolk State University Higher Education Center, in Portsmouth at the Norfolk State University/Old Dominion University Tri-Cities center and in northern Virginia at our Northern Virginia Higher Education Center. The University of Virginia and Virginia Tech also operate a combined graduate center in Virginia Beach. Industry receive sites include NASA/Wallops Island (satellite courses), Norfolk Naval Base (cable courses), Norfolk Naval Shipyard (cable courses), Fort Eustis (cable course) and Dam Neck Training Center (cable courses).

CGEP Perspectives for AY 2005 – 2006

Overall Old Dominion University enrollments increased this academic year in both Net. Work. Virginia courses, statewide satellite courses and local broadcast courses. Several students from outside Hampton Roads completed their Engineering Management program of study through televised courses and graduated in AY 2004-05. A significant number of students living in Hampton Roads complete their course work by attending televised courses at local receive sites.

The Old Dominion University Commonwealth Graduate Engineering Program continues to be a vehicle that provides high quality distance learning engineering education to the Hampton Roads region and beyond. Old Dominion University will emphasize Master's Degree offerings in the area of Design and Manufacturing and Experimental Methods beginning next year. Both of these are proven areas of interest to professional engineers who need to continue their education. The ability to provide such education has been of benefit to the population of the Eastern Virginia region as well as the Commonwealth of Virginia as a whole.



University of Virginia

James Groves – Director

Review of Academic Year 2004-2005

The University of Virginia continues to serve as a broadcast university within the CGEP network. This past year, UVa has

sought to strengthen its activity within the CGEP network by focusing upon faculty recognition, upgrade of technology infrastructure, and diversification of course offerings. Traditionally, UVa has offered distance degree programs in Mechanical Engineering, Materials Science & Engineering, Chemical Engineering, Civil Engineering (Structural), Systems Engineering, and Electrical Engineering. This past year saw the completion of the first full year of offering of a distance masters degree opportunity in Engineering Physics. During this academic year, that program continued into its second year. State budgeted monies for CGEP supported the staff and infrastructure necessary to implement the various facets of the UVa program offerings. In addition to courses broadcast by UVa, the university received a set of cross-listed courses from Virginia Tech and Virginia Commonwealth University. These courses were made available to on-grounds students, providing them a broader portfolio of course offerings.

Increasing Faculty Recognition and Support

This past year represented the first year in which the UVa CGEP activity has presented selected faculty with awards to call attention to their contributions to distance learning at the university. This year, at the first engineering school faculty meeting of the fall, UVa CGEP Director James Groves presented Professors Larry Richards and Jose Gomez with the first CGEP Instructor of the Year awards at UVa. In addition to plaques which noted their recognition, the faculty members received a cash bonus paid from engineering school funds.

Larry Richards was recognized for having 1) Taught multiple courses in the distance environment over his tenure. Last year he taught his eighth course. This fall he is teaching his ninth. 2) Written and published multiple articles on his Distance Education activities. 3) Contributed to the Commonwealth's distance education program in engineering by serving as a member of the statewide program's Advisory Board, providing a valuable faculty perspective in semi-annual discussions. 4) Actively experimented with new technology solutions for

the distance learning environment and engaged available staff resources to fine tune his teaching for the distance environment. 5) Made an exceptional effort towards continuous distance teaching improvement, as evidenced by development of his own middle and end of course surveys specific to his distance courses and teaching solutions.

Jose Gomez was recognized for having 1) Taught three semester courses in the distance environment and has supported several additional off-grounds students in Independent Study course activities. 2) Demonstrated an exceptional responsiveness to distance education administrative requests for course information such as syllabi, textbook requirements, exam schedules, and final grade sheets. 3) Developed a strong rapport with the classroom technicians, impressing them with his class organization, punctuality, overall positive attitude, and command of the video classroom equipment. 4) Consistently had one of the highest end of course evaluation scores of any of our distance instructors (3.94 out of 4.0 in Spring 2004). In a letter to our program this spring, one student commented that "Throughout [the four courses I have taken with this individual], I have found [him] to be an excellent teacher whose notes, assignments, and exams were understandable, informative, instructive, and fair. He has always responded promptly to questions, requests for information, and clarifications that were required for a distance student to complete the course work."

Increasing Course Offerings

To provide students in the distance environment with additional educational opportunities, UVa has continued to pursue strategies that allow additional courses to be offered in the distance environment. While these additional course offerings are not directly paid for by state-allocated CGEP funds, the hardware, software, and staff resources put in place by CGEP allow these additional courses to be offered. If the CGEP network were to disappear, these additional offerings would also be negatively impacted. This past academic year, four additional offerings have been made in support of the Engineering Physics program, and two additional course offerings have been made in support of UVa's participation in VCES – the Virginia Consortium of Engineering and Science Universities. As a result of these additional offerings, UVa's course portfolio this year grew from the traditional offering of 16 graduate courses per academic year to 22. Finally, the availability of CGEP resources enabled UVa to pilot an undergraduate distance course offering to the Blue Ridge Virtual Governor's School. This outreach into the K-12 environment provided nearly twenty students with access to a for-credit course entitled "Explorations in Engineering". Within UVa's enrollment count, the students enrolled in all graduate level distance courses are counted. The Governor's School student enrollments are not counted.

Examining Instructional Technology

In collaboration with colleagues at Old Dominion University and Virginia Tech, UVa has undertaken a focused examination of the underlying course transmission technology employed by CGEP. At present, CGEP is employing a dedicated asynchronous transfer mode (ATM) network throughout the Commonwealth to transmit the video and audio signals associated with each live course offering. While this ATM network has provided reliable service to CGEP since 1998, the changing face of technology is now beginning to dictate that CGEP move to the next generation of technology – internet protocol (IP). This change is being prompted in part by the inability of CGEP to acquire replacement parts for its ATM equipment. Suppliers are simply not manufacturing new components, and as a result, the CGEP network is currently dependent upon the spare parts that it has accumulated during recent years. Once those parts are exhausted, a change will have to occur. To be proactive, technical staff members at UVa, ODU, and VT have been participating in weekly teleconferences as they evaluate how best to shift CGEP over to IP transmission technology. At present it appears as though a partial shift, a “pilot” shift, will occur during the fall of 2005. As the institutions gain confidence that the new network infrastructure provides the expected quality of service, further steps will be taken to move CGEP from ATM to IP technology. As part of this move, VT, through Net.Work.Virginia has initiated discussions with telecommunication service providers to establish a high quality of service IP network across the Commonwealth, to support CGEP course broadcasts. These discussions have resulted in a recently completed addendum to the existing Net.Work.Virginia contract with those service providers.

Enrollments

Due in large part to UVa's increase in course offerings during the 2004-2005 academic year, UVa's CGEP activity has seen a small rise in enrollments over the previous year. At present this rise has not resulted in large distance class sizes. Rather, it has resulted in similar distance enrollments in a larger number of classes. The enrollments reported here include both on-grounds and off-grounds students participating in UVa CGEP course offerings, both courses broadcast by UVa and cross-listed courses received by the university.

Continuous Process Improvement Projects

During the summer and early fall of 2004, the UVa engineering school completed a survey of its faculty regarding the use of technology in graduate teaching. In brief, the survey revealed that most UVa engineering faculty feel proficient with technology (70% rated themselves as a 4 or 5 on a proficiency scale of 5.). They most often learn about new instructional technologies through their colleagues (68%). In the classroom, the most often used technology tool is Powerpoint (71%), followed by math related software packages (40%). The vast majority of respondents indicated that they use the univer-

sity's Toolkit course management system (81%) and that they are generally satisfied with its capabilities. A large majority of the faculty (74%) said that, given other professional priorities and performance metrics, they do not have the time necessary to incorporate additional educational technologies into their teaching portfolio. A significant minority (37%) expressed an interest in developing on-line course components if appropriate resources (e.g., summer salary and multimedia support) were provided. Approximately half of the respondents expressed interest in educational technologies that fostered enhanced communication outside the classroom (e.g., class discussion, sub-group discussion, and document exchange). Finally, approximately one-third of all respondents expressed an interest in hearing more about educational technologies, either through an e-mail distribution mechanism or periodic face-to-face meetings.

Facilities and Support Structure

As noted above during the discussion of instructional technology, UVa has invested significant resources this year into understanding the critical issues associated with transitioning from ATM to IP technology. It is expected that UVa will begin limited IP transmission of courses this fall. Additionally, given the additional number of courses being offered by UVa each year (22 this year vs. 16 traditionally), UVa is examining whether or not it can identify the resources that will allow hiring of an additional half technician position to manage the broadcast of these additional courses.

CGEP Perspectives for AY 2005-2006

During the upcoming year, UVa will initiate a move to IP transmission of courses. UVa will also seek to simplify student participation in the overall program by helping to populate the revised statewide website with up-to-date course offering information. UVa has plans for a significant summer advertising activity that should generate a set of new enrollments in the program.

UVa will seek to enhance its connection with the other universities in the program through additional cross-listing of courses and planning for new initiatives in emerging technology arenas like nanotechnology. As part of that effort, UVa participated this winter in a solicitation sponsored by the Virginia Microelectronics Consortium (VMEC). VMEC offered to support the development of two courses for the distance environment. UVa Electrical and Computer Engineering Department faculty member Mircea Stan was selected as one of the course development fund recipients. This fall he will teach a revised VLSI Design course for students across the entire state system. During the summer of 2005, UVa will work closely with Professor Stan to ensure that his course development activities are effective. Then we will support him in the fall as he offers the course in the distance environment. Offering of this course will bring exciting new content to the distance environment and allow UVa to maintain expanded course offerings.

Virginia Commonwealth University

L. Thomas Overby – Director

Review Academic Year 2004-2005

Virginia Commonwealth University (VCU) continues to serve as a receive site for area students who enroll in CGEP courses. Many of the students registered for CGEP courses are engineers from leading industries in and around Richmond. However, in 2004-2005 a significant number of those students were VCU graduate engineering students enrolled in cross-listed courses; that is, courses received at VCU from other CGEP institutions and assigned a VCU course title and number.

VCU CGEP offers a Master of Science degree in Computer Science at the Naval Surface Warfare Center (NSWC) at Dahlgren Virginia via distance technology. It should be noted that NSWC Dahlgren is the largest employer of engineers and scientists in the Commonwealth. This program served 51 different individuals in 2004-05. A number of National Aeronautics and Space Administration (NASA) at Langley Virginia engineers were admitted to the VCU Master of Science in Engineering program. These students enrolled in graduate engineering courses transmitted to that site by VCU. Working with NSWC Dahlgren, NASA Langley and area industry, the potential exists for VCU to greatly expand its role as a transmission site.

Virginia Commonwealth University received \$557,001 for FY 2004 in support of CGEP activities. The University, SoE, and NSWC Dahlgren entered into an agreement whereby NSWC Dahlgren paid increased tuition and fees for delivery of the Computer Science Program to their site at Dahlgren. This agreement, Entrepreneurial Program Tuition Agreement, (EPT) generated approximately \$87,500 that was allocated by SoE to assist in funding the CGEP NSWC Dahlgren Computer Science Program.

State budgeted CGEP funds were utilized for both transmission and reception of CGEP courses. The transmission portion of the funds has been used in support of the transmission of statistics, engineering, and Computer Science courses. These funds have been used to support the course instructor in the preparation and presentation of these courses. In addition, CGEP funds were used to support a graduate teaching assistant for aid with the courses, to provide course materials, and to videotape the courses for those enrollees who miss classes on various occasions.



The other portion of these funds has been used in support of the received CGEP courses. This support included a VCU CGEP staff coordinator and graduate student assistants who monitor and supervise enrollments, room usage, and videotaping of courses for attendees who miss classes on various occasions. The actual disposition of funds between transmission and reception of courses may vary from year to year depending on the number of enrollees in the transmitted and received courses.

CGEP Offerings

The Computer Science program continues to be the major contributor of CGEP courses at VCU. A total of fourteen courses were transmitted to NSWC Dahlgren during 2004-2005. These courses were transmitted via Interactive Video Conferencing (IVC).

The VCU CGEP M.S. Engineering program transmitted three graduate engineering courses this year via IVC. The courses were EGRM 591 Flow Control, ENGR 501 Advanced Manufacturing Systems and EGRE 631 Embedded Systems. Students at the NASA Langley Research Center received the three courses.

VCU CGEP broadcast STAT 541 Applied Statistics for Engineers and Scientists to other CGEP institutions. Those institutions usually cross-listed this course as their course with a local course prefixes and number. The need for this course is indicated by the enrollment of 30 students in fall of 2004.

Enrollments

The VCU NSWC Dahlgren Computer Science Program is completing its third full year of operation. This program continues to add a significant number of students to the transmitted courses enrollment. However, a decline in NSWC enrollment (88 enrolled) occurred in 2004-2005 when compared to (110 enrolled) in 2003-2004. It appears that the rate at which new employees are entering the NSWC Dahlgren work force has declined from earlier years of the Computer Science program. If this were the case, this would account for the slight decline in total program enrollment. VCU expects CGEP enrollment to increase as the VCU CGEP based M.S. degree in Engineering program expands into the business/industry sector.

The total received and transmitted course enrollment declined slightly to 150 as compared to 154 for 2003-2004. That decline is explained by the decrease in the Computer Science Program enrollment.

VCU SoE has participated significantly in cross-listing courses with other CGEP schools. We received four courses that we cross-listed as VCU courses with a total VCU enrollment of 12. We transmitted three courses that were cross-listed by UVA and ODU with a total enrollment of 38.

Continuous Process Improvement Projects

VCU continues to review its procedures, equipment, and support structure for areas that can be improved. A number of equipment upgrades have been made on the basis of instructional faculty meeting with the support staff. Feedback from students has resulted in changes to improve instruction.

The assignment of two School of Engineering (SoE) classrooms for CGEP courses has improved the availability of distance technology equipped rooms.

Facilities and Support Structure

Virginia Commonwealth University maintains numerous facilities in support of the Commonwealth Graduate Engineering Program for both transmission and reception of CGEP courses. A modern and complete distance learning room is available in the VCU School of Business. In addition, a distance learning room is available on the VCU Medical Campus in the Thompkins McCaw Library. A large conference room (15 students) in the SoE building is equipped with a Polycom two-way audio/two-way video multi media system. Internet or ISDN connections are available with this system. The system has proved to be very effective for transmission and reception. A second, much larger, SoE building room (40 students) is also equipped with a Polycom system.

VCU CGEP continues to utilize four teleconferencing rooms in the Cabell Library located on the VCU Monroe Park Campus. These rooms have undergone modernization and have been upgraded to better serve as transmit and receive sites.

VCU CGEP has significantly increased its transmission and reception capabilities. This increased capability will support our increased involvement in CGEP activities in the coming years. It is also possible to port the received and transmitted courses at the above noted sites to dozens of other VCU sites (on both the Monroe Park and Medical Campuses) via a closed circuit network. Over 50 classrooms and auditoriums have such capabilities at VCU. In addition, the Virginia Biotechnology Research Park operates a classroom, which can be outfitted for distance learning. Given our strong relationship with the Biotech Park (VCU is one of its three supporting elements), this added facility might serve the addition of biotechnology related courses to the CGEP mix in the coming years.

CGEP Perspectives for Academic Year 2005-2006

With the addition of the new distance learning facilities, Virginia Commonwealth University sees potential for some growth. The transmission of STAT 541 will continue each fall semester and Computer Science courses will be offered to NSWC Dahlgren in the fall, spring and summer semesters. VCU's CGEP five-year plan includes several new CGEP courses and an expansion of the M.S. in engineering degree program. The program currently has several graduate degree-seeking students at NASA Langley Research Center.

VCU is a significant participant in course cross listing within CGEP. We welcome the opportunity to expand this effort through a planned systematic approach to cross listing of CGEP courses. Transmitting and/or receiving graduate Chemical, Electrical/Computer and Mechanical Engineering within CGEP is a high priority for VCU CGEP.

The VCU Engineering faculty interact with business/industrial partners on a continual basis in collaborative research, collaborative teaching, and through professional organizations. Business/industry leaders provide additional input on our degree granting programs through their service on our Industrial Advisory Boards (IAB's) for each of our degree granting programs Bio-medical Engineering, Chemical Engineering, Mechanical Engineering, and Computer Science. Through our business/industry partners and increased marketing efforts, we see a potentially significant market for the M.S. in Engineering degree via IVC in the Richmond and surrounding areas. Our plan for course offerings to be transmitted from VCU for the coming two years will include STAT 541 and 2 to 4 graduate ENGR courses.

VCU CGEP invested approximately \$87,500 SoE funds in support of the 2004-2005 CGEP program. It is anticipated that a similar amount would be invested in 2005-2006. This is based on the assumption that the NSWC Dahlgren program and the EPT continue at or above the current level of enrollment.

Virginia Tech

Glenda Scales - Director



Review of Academic Year 2004-2005

Over the past year our CGEP team was able to accomplish several major initiatives as well as prepare for a leadership change in the college of engineering.

Our major achievements were in the areas of increasing faculty recognition, improving our distance learning student community and upgrading our instructional technology.

Increasing Faculty Recognition & Support

The W.S. "Pete" White Award for Innovation in Engineering Education was established last year to recognize extraordinary faculty contributions in the area of distance and distributed learning. Dr. Alfred Wicks, a Mechanical Engineering professor, is the recipient of this year's award. Dr. Wicks works in the biomedical field and was involved with the Defense Advanced Research Projects Agency (DARPA) unmanned vehicle program. He is a superb advocate for incorporating new technologies in the teaching and learning environment.

Our college's faculty study groups are continuing successfully, with approximately one fourth of the engineering faculty participating. These groups serve as a unique opportunity for new and seasoned faculty to receive feedback on instruction as well as an opportunity to practice new instructional techniques. According to several faculty, these study groups allow faculty to allocate specific time in their busy schedules for the sharing of teaching and learning ideas. This type of intellectual synergy tends to improve overall instructional practices. This year the study groups focused on topics including:

- applying the *conceive, design, implement, operate* approach to education, teaching and curriculum development;
- discussing professional and ethical diversity and why there are so few women in electrical and computer engineering;
- exploring various teaching types;
- teaching engineering design;
- teaching microfluidics in engineering science and mechanics;
- engaging in faculty discourse on issues and cutting edge solutions to improve our ability to teach effectively; and
- using a portfolio for ABET assessment.

Distance Learning Student Community

During the fall 2004 semester, our student community initiative expanded to include our Northern Virginia campus and students in the Master of Information Technology and the Aerospace and Ocean Engineering programs. Welcome letters along with Hokie writing pads and VT pens were sent to over 115 new students this academic year. A continued effort to monitor the progress of our students through their distance learning programs is very important to our office in order to provide an online connection to VT. Several reasons for students not returning to VT included: relocating, yet hoping to take a VT course online; scheduling conflict; and limited availability of course offering approved for student's plan of study. Thirty-seven of the 51 new students in the fall returned for the spring semester, which was about a 72% return rate.

Upgrading Instructional Technology

The College of Engineering invested in the first interactive video conferencing (IVC) classroom using Internet Protocol, or IP, (H.323) located at Virginia Tech in fall

2004. The significance of this classroom is that it serves as a pilot classroom as Virginia Tech works towards transitioning from the Asynchronous Transfer Mode Network, or ATM, (H.320)-based protocol to IP (H.323). This classroom will be included in future research on video conferencing.

Additionally, we are investigating a mobile video capture station designed to give our faculty the capability to record and synchronize their PowerPoint presentations outside of the standard IVC classroom.

Enrollments

With 11 additional courses offered during the 2004-05 year, VT experienced an 8.8% increase in course offerings. Aerospace and Ocean Engineering offered 15 distance learning courses over the past academic year, two of which were taught during the summer. Our goal to offer more courses during the summer is an initiative based upon information gathered from our student feedback survey.

Civil and Environmental Engineering has offered a total of 45 distance learning course over the past seven years and offered 17 this past academic year. Computer Science joined the college last year and they have offered 12 courses, including two in the summer. Electrical and Computer Engineering is now offering 26 courses including one in the summer and an increase of eight courses over the past academic year. Industrial and Systems Engineering added two courses over past academic year, making a total of 14 with two offered during the summer.

Other departments offered a limited number of courses as they worked towards collaborative instructional projects with various university partners.

Virginia Tech has provided 35% of the total Commonwealth Graduate Engineering Program enrollments for the 2004-2005 academic year, despite the slight decrease in enrollments.

Enrollment Review	
Academic Year	Enrollment Trend
1990-1991	997
1991-1992	1201
1992-1993	1414
1993-1994	1333
1994-1995	1007
1995-1996	1043
1996-1997	979
1997-1998	802
1998-1999	749
1999-2000	1556
2000-2001	1664
2001-2002	1384
2002-2003	1497
2003-2004	2345
2004-2005	2105

Continuous Process Improvement Projects

There is a continued process to align the office services and goals with the direction of the College of Engineering, as well as with the university's strategic plan.

Sasima Thongsamak is responsible for establishing a performance metric system for the College of Engineering's distance learning programs. She continues to update and refine the tools required to monitor the performance of CGEP. This academic year she developed and implemented a new tool that will provide a technique for assessing our distance learning programs using the balanced score card approach. The new tool will also store the data.

The next step will be to assist our other distance learning program areas in establishing their key performance measures and setting targets to strive for.

Facilities and Support Structure

Virginia Tech continues to use Net.Work.Virginia as the primary delivery method for our courses. However, this spring our CGEP team has been working closely with Office of Network Infrastructure & Services and the Office of Distance Learning and Computing in planning the transition from H.320 technology to H.323. Virginia Tech plans to move forward with partial H.323 deployment for the fall 2005 academic semester.

CGEP Perspectives for AY 2005-2006

As we prepare for the next academic year, we will look forward to the flexibility the IP delivery formats will provide. There is a goal of offering an online certificate program in Engineering Education and eventually a master's degree. We will continue to track our students using their feedback to make changes that will attract more students and increase retention of the ones we have. We will keep our web pages current and continue to improve the look and feel to benefit our students.

Virginia Tech is working closely with the Virginia consortium of Engineering and Science Universities and the Virginia Microelectronic Consortium in order to support and promote new courses through CGEP. Recently, Dr. Kathleen Meehan, an assistant professor in the department of Electrical and Computer Engineering at Virginia Tech, received funding from the Virginia Microelectronic Consortium (VMEC) to support the development of a distance learning course on Nanophotonics (Advanced Topics in Electronics) for delivery during the fall 2005 semester. This course, which brings an action item from the CGEP Strategic Plan to fruition, represents the combined efforts of the professor and the CGEP directors.

CGEP has a goal of offering the best education available to our working engineers and scientists and with our outstanding faculty, we believe we will continue to produce quality learning experiences.

Funded Receive Site Reports



Center for Advanced Engineering

Jack Gwinn – Director

The Center for Advanced Engineering in Lynchburg experienced its largest throughput in recent history. For calendar year 2004, ten (10) people received degrees. Two of those were MBAs. The average number of graduates over the past seven years is 6.6.

Registrations for the past academic year continued to decline. New marketing overtures the past year have not created the expected outcomes; however, it is usually a blend of old and new approaches that prove effective.

The greater Lynchburg region is developing an initiative that involves the creation of an allied organization, the Center for Advanced Engineering and Research. The initial focus is to work with universities and federal labs to match research initiatives with industry clusters. The generation and application of new knowledge, regardless of the source, requires a competent scientific and technological workforce. The development is expected to lead to greater participation in the CGEP.



Tim Owen – Program Coordinator

The Southern Virginia Higher Education Center (SVHED) has been an active participant in the CGEP since March, 1986, at which time it was known as the Halifax County-South Boston Continuing Education Center. In 1989 Longwood University became the parent fiscal agency of the center. Under Longwood's guidance the Center grew and in 2001 moved into a newly renovated facility with state-of-the-art technology and greatly expanded office and classroom space. With the move came the name change to The Southern Virginia Higher Education Center. The name change is intended to be more inclusive of the many Virginia colleges and universities that provide programs through the center.

The 2005 Virginia General Assembly passed legislation making the SVHED an independent state agency. This bill was signed into law by Governor Mark Warner in April and the change will take effect July 1, 2005. The mission of the SVHED continues to be to provide quality educational programs of all levels to the citizens of our service region. Were it not for the SVHED many of these programs, including the CGEP, would not be available in Southern Virginia.

The SVHED provides six classrooms for use by the CGEP. Of these six two are offices that can be converted to classroom usage in the evenings. Classrooms are equipped with color monitors, VCR, and interactive video equipment. In addition to the CGEP, the interactive video equipment helps support the Virginia Tech/Virginia Department of Health sponsored videoconferences. Other technologies including DVD players, internet access, personal computers, document cameras, scanners and fax machines are available to CGEP students upon request.

During the 2004-05 academic year, the SVHED served two students enrolled in two classes. The Pittsylvania County School System and the City of Danville Public Works Department were the employers and sponsors of these students.

Traditionally the SVHED has used various techniques to market the CGEP to prospective students. There is a general information bulletin describing all SVHED programs that is distributed to business and industry. There is also a two page bulletin specifically detailing the CGEP. The SVHED uses a combination of telemarketing, direct mailings, industry visits and paid advertising, and open houses to promote the program.

The 2005-06 academic years breaks with new and exciting possibilities for the SVHED. As the Southern Virginia Higher Education Center becomes an independent agency on July 1, 2005 there is great potential for marketing the CGEP. The additional funds allocated to the newly formed agency include an expanded marketing budget as well as a marketing director. Recent projects initiated by the South Boston/Halifax County Industrial Development Authority are creating the potential for more qualified prospective graduate engineering students in the region. Included among these are the opening of the Riverstone Technology Park, and the expansion of facilities at the Virginia International Raceway to include shops for race teams. The economic development which is budding in Southern Virginia promises benefits for citizens. Programs like the CGEP should play a significant role in continued growth.



Lynn Hamilton – Technology Academy Director

The Commonwealth Graduate Engineering Program (CGEP) at the University of Mary Washington, College of Graduate and Professional Studies (CGPS) provides 3 distance education classrooms seating between 2 and 12 students. All designated classrooms receive the signal via NET.WORK.VIRGINIA ATM, 2 with Dell systems and 1 with a Gateway system using a Zydacron card with the Zydap2 software. The evening technical staff videotapes classes if the students request and the tapes are available in the CGPS library. Most students view past programs via streaming at home, work or in a CGPS computer lab. CGPS also provides library and computer support as required.

Student enrollments at the University of Mary Washington and additional course offerings fill the classroom space. Since the CGEP classes were moved to a smaller space, registrations are limited to the number of seats available. To date, this has not been a problem. Most of the assignments are sent between faculty and students via the Internet but the evening technical support staff assists in the delivery and collection of course materials and homework assignments. Techs also record classes that have been requested by the student. They also provide technical troubleshooting services when needed.

Registrations for Va Tech courses were 2 for Summer 2004, 8 for Fall 2004 and 7 for Spring 2005. Registrations for UVA courses were 7 for Fall 2004 and 5 for Spring 2005. Registrations for Old Dominion University were 0 for Fall 2004 and 1 for Spring 2005.

CGEP registration total for AY 2003-2004 was 30. This represents an increase in enrollment in graduate engineering degrees by Fredericksburg area residents. AY 1995-96 had 131 students, AY 1996-97 had 88, AY 1997-98 had 96, AY 1998-99 had 34, AY 1999-2000 had 31, AY 2000-2001 had 21, AY 2001-2002 had 20, AY 2002-2003 had 9 and AY 2003-2004 had 19.